

DETAILED ACTION

1. This office action is in response to communication filed on April 7, 2010.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7, 8-9, 10, 12-14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,397,098 to Uber.

Regarding Claim 1, Uber discloses a method of controlling a local application of drugs to a part of a body of a patient during a CT scan (col. 7, line 2), wherein the drugs are transported in containers suitable for introduction into a bloodstream of the patient (injection needle, fig. 1; molecules, col. 15, lines 1-10); wherein the containers prevent an application of the drugs (syringe/needle assembly, fig. 1; molecules are not activated to release drug initially, col. 15, lines 1-3); and wherein a first drug is transported in a first container (contrast agent, fig. 1; drug, col. 15, lines 1-2); the method comprising the steps of:

Monitoring a heart beat rate (col. 10, lines 29-31) of the patient during the CT scan (col. 7, line 2);

Rupturing the first container (injecting contrast with needle injector inserted into the blood stream; activating with x-ray to release drug, col. 15, lines 1-3) in proximity to

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the part of the body on the basis of the monitored heart beat rate (to increase or decrease perfusion, col. 14, lines 1-8), resulting in a local application of the first drug to the part of the body (col. 10, lines 29-31, controlled rate of contrast agent injection based on heart beat rate).

Regarding Claims 2 and 4, Uber further discloses wherein the drugs can be locally applied to the heart via rupturing the first container; and wherein the rupturing the first container results in a controlled change of the heart beat rate (activating with x-ray to release vasodilator/constrictor drugs to increase perfusion, col. 14, lines 5-8, col. 15, lines 1-3).

Regarding Claim 3, Uber further discloses wherein the containers can be activated via ultrasound (col. 15, lines 1-3).

Regarding Claim 7, Uber further discloses the use of microbubbles carrying drugs administered to increase and decrease cardiac output load (col. 10, lines 32-35).

The features of Claims 8-9, 10, 12-13, and 17 are disclosed in the rejection of claims 1-4 and 7 above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 5-6 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uber as applied above.

Regarding Claims 5-6, Uber further suggests that microbubbles can be selectively ruptured based on their size but does not disclose carrying two types of drugs with two differently sized microbubbles. Uber further suggests that two types of drugs are applied to vary perfusion rates of the patient for a stress test (vasodilators/vasoconstrictors) which are known to have an effect on heart beat rate (col. 14, lines 1-8). Uber further discloses the use of microbubbles carrying drugs administered to increase and decrease cardiac output load (col. 10, lines 32-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to provide two differently sized microbubbles for drug delivery of vasodilators/vasoconstrictor drugs for varying heart rate during an imaged stress test as suggested by Uber.

Response to Arguments

7. Applicant's arguments with respect to the rejection(s) of claim(s) 1-17 over the Baker and Jackson references have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a newly applied reference. Although the Uber reference is accomplishing a different goal than the application, the claims still read broadly on contrast injection regulation and CT stress tests drug administration. The claims would overcome the references of record if steps were added that specifically require the control of the heart beat rate during the CT scan to be for the purpose of creating a steady heart beat rate during the CT scan in order to reduce variations in heart beat rate of the patient during the CT scan that result in an improved image quality of an image of the patient's heart, as disclosed on Page 1 of the disclosure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. Hoffa whose telephone number is 571-270-7408. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/A. M. H./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768